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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/977,254	10/16/2001	Geoffrey Alan Ozin	13786	2248

7590 10/12/2004

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EXAMINER

CHEVALIER, ALICIA ANN

ART UNIT	PAPER NUMBER
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1772

DATE MAILED: 10/12/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/977,254

Applicant(s)

OZIN ET AL.

Examiner

Alicia Chevalier

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 August 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16, 87-100 and 102 is/are pending in the application.
- 4a) Of the above claim(s) 91 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-16 and 87-100 is/are allowed.
- 6) ☒ Claim(s) 92-94, 96, 97, 99 and 100 is/are rejected.
- 7) ☒ Claim(s) 95, 98 and 102 is/are objected to.
- 8) ☐ Claim(s) are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. .
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

RESPONSE TO AMENDMENT

1. Claims 1-16, 87-100 and 102 are pending in the application, claims 17-86 and 101 have been cancelled.
2. Amendments to the claims, filed on August 5, 2004, have been entered in the above-identified application.

WITHDRAWN REJECTIONS

3. The 35 U.S.C. §112 rejection made of record in paper #8, mailed December 19, 2003, pages 2-3, paragraph #4 has been withdrawn due to Applicant's amendment in the response filed August 5, 2004.
4. The 35 U.S.C. §102 rejections made of record in paper #8, pages 3-9, paragraphs #6-10 has been withdrawn due to Applicant's amendment in the response filed August 5, 2004.

NEW REJECTIONS

5. **The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.**

Claim Rejections - 35 USC § 112

6. Claims 99 and 100 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term “superlattice” in claim 99 is unclear and renders that claim vague and indefinite. It is unclear what a “superlattice” is.

Claim Rejections - 35 USC § 102

7. Claims 96 and 97 are rejected under 35 U.S.C. 102(e) as being anticipated by Maenosono et al. (U.S. Patent No. 6,337,117).

Regarding Applicant’s claim 96, Maenosono discloses an optical device comprising a substrate and a first array of first nanoparticles in a binder of a first red size arrayed in elongate patterned strips (*col. 14, lines 8-18*) across a top surface of the substrate, and a second array of second nanoparticles of a second green size arrayed in elongate, parallel and spaced strips across a top surface of the substrate with each strip of said second array being between two adjacent strips of the first array, and wherein said first size is different from the second size (*col. 13, line 66 bridging col. 14, line 30 and figure 4c*). Note colloidal particles are particles in a suspension and have a size of 1 to 1000nm.

Maenosono’s nanoparticles, nanometer sized particles, in a binder are deemed to meet the limitation “colloidal particles.”

Regarding Applicant’s claim 97, Maenosono discloses the first nanoparticles have a diameter to reflect the color red and the second nanoparticles have a diameter to reflect the color green (*col. 14, lines 4-30*) and from figure 4c it is apparent that the particles are spherical, which reads on Applicant’s limitation wherein the first colloidal particles are spherical colloidal particles having a first diameter and the second colloidal particles are spherical colloidal particles having a second diameter different from the first diameter, and wherein the device is

characterized by a reflectance bandwidth determined by the diameter of the first spherical particles and a second reflectance peak having a wavelength position and bandwidth determined by the diameter of the second spherical particles.

Claim Rejections - 35 USC § 103

8. Claims 92-94 are rejected under 35 U.S.C. 103(a) as being unpatentable over Asher et al. (U.S. Patent No. 6,014,246).

Regarding claims 92-94, the method of forming the product is not germane to the issue of patentability of the product itself. Furthermore, the determination of patentability for a product-by-process claim is based on the product itself and not on the method of production.

Regarding claim 92, Asher discloses a substrate with a substantially planar top surface and layer on top of the substrate containing first and second colloidal particles of selected shape and size and infiltrating a polymer into void spaces between the colloidal particles (*col. 9, lines 1-62 and col. 5, lines 41-56*).

It is noted that fails to disclose particles of different sizes.

However, it would have been an obvious matter of design choice to change the shape of use different size particles, since a modification would have involved a mere change in size of the particles. A change in size or shape is generally recognized as being within the level of ordinary skill in the art, absent unexpected results. MPEP 2144.04 (I) and (IV).

Regarding claim 93, Asher discloses that the first colloidal particles are spherical colloidal particles having a first mean diameter, and wherein said second colloidal particles are

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spherical colloidal particles having a second mean diameter wherein said first diameter is smaller than said first diameter (*col. 9, lines 47-62*).

Regarding claim 94, Asher discloses that the product is characterized by a reflectance spectrum comprised of a first reflectance peak having a wavelength position and bandwidth determined by the diameter of said first spherical particles and a second reflectance peak having a wavelength position and bandwidth determined by the diameter of said second spherical particles (*col. 9, lines 47-62*).

Potentially Allowable Subject Matter

9. Claims 1-16 and 87-91 are allowed.
10. Claims 95, 98 and 102 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

They are potentially allowable because their features are not taught or suggested in the prior art.

REASONS FOR ALLOWANCE

11. The following is an examiner's statement of reasons for allowance:

The prior art fails to teach or suggest the recited a composite material comprising a substrate having a surface relief pattern formed of surface features on a surface of the substrate including any of closed indentation, closed channels and open and continuous channels of selected size and shape, and a well ordered colloidal photonic crystal formed of colloidal

particles of selected size and shape self-assembled within each of the surface features in the surface relief pattern, and each colloidal photonic crystal exhibiting optical Bragg diffraction.

In sum, the prior art of record fails to teach or suggest composite material having all the features of the base claims.

12. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

ANSWERS TO APPLICANT'S ARGUMENTS

13. Applicant's arguments in the response filed August 5, 2004 regarding the previous rejections of record have been considered but are moot since the rejections have been withdrawn.

Conclusion

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alicia Chevalier whose telephone number is (571) 272-1490. The examiner can normally be reached on Monday through Friday from 8:00 am to 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Harold Pyon, can be reached on (571) 272-1498. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Alicia Chevalier
10/8/04

